

CLAIMS

What is claimed is:

1. A wafer area pressure confinement apparatus, comprised of a ring manufactured such that at least one hanging bore is present within said ring;

10 said hanging bore receivably allowing a mating portion attached to the interior of a chamber to couple said ring.

2. The wafer area pressure confinement apparatus of claim 1, wherein said at least one hanging bore numbers three hanging bores spaced at 120 degree intervals.

3. The wafer area pressure confinement apparatus of claim 1, wherein said hanging bore is twistingly attached to said interior of said chamber.

4. The wafer area pressure confinement apparatus according to claim 1, wherein said hanging orifice is twistingly attached to said interior of said chamber via chamber plungers.

5. The wafer area pressure confinement apparatus of claim 1, wherein said hanging bore mates with a twist and lock adapter by aligning said adapter with said hanging bore, and; moving said pressure confinement apparatus vertical to said adapter such that said adapter fits in said forward portion of said hanging orifice and whereby a 5 degree twist of said wafer area pressure confinement apparatus attaches said adapter to the rearward portion of said hanging orifice.

6. The wafer area pressure confinement apparatus of claim 1, wherein said ring is manufactured from a dielectric material.

7. The wafer area pressure confinement apparatus of claim 6, wherein said dielectric material is quartz.

5 8. A method of attaching for attaching at least one wafer area pressure ring to the interior of a plasma processing chamber comprising:  
providing a hanging adapter to be hung from the chamber ceiling;  
aligning said hanging adapter aligning said adapter with a hanging bore contained on at least one wafer area pressure ring, and;  
10 moving said pressure confinement apparatus vertical to said adapter such that said adapter fits in said forward portion of said hanging orifice and whereby a 5 degree twist of said wafer area pressure confinement apparatus attaches said adapter to the rearward portion of said hanging orifice.

9. A plasma processing chamber comprising:  
means for housing a gaseous medium useful for etching;  
a parallel pair of electrodes defining therebetween an interaction space where a plasma capable of etching a workpiece supported on one of the electrodes is generated when radio-frequency energy is provided for establishing a discharge between the electrodes for ionizing the gaseous medium;

20 a stack of at least three rings, which are space apart from each other to form slots therebetween and are positioned to surround the interaction space, for controlling the exit of spent gases and for neutralizing charged particles as they exit the interaction space and thereby for confining the discharge essentially to the interaction space;

said stack of at least three rings twistingly attached to chamber plungers through the use  
25 of hanging bores manufactured in each of said at least three rings;

a first radio-frequency voltage source having a frequency in the range of about 1.5 to 2.5 megahertz;

5 a second radio frequency voltage source having a frequency in the range of about 25 to 30 megahertz;

the first source being coupled to the first electrode by way of an impedance-matching circuit and to a ground return thereof by way of a low-pass filter; and

10 the second radio-frequency voltage source being coupled to the second electrode by way of an impedance-matching circuit and to a ground return thereof by way of a high-pass filter.

10. A confinement assembly which comprises:

a circular ring;

hanging bores manufactured therein by drilling two circular bores; a receiving and locking bore, offset from one another but in close proximity;

the first receiving bore's drilling diameter being consistent throughout the depth of the drilling process;

the second locking bore's drilling diameter consistent with the first receiving bores diameter for a portion of the drill and then reduced for the remaining portion of the drill.